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REMARKS

Amendment to the Specification

The specification has been amended to correct typographical errors and to reflect proposed amendments to the figures. It is submitted, however, that these corrections do not have any impact on the scope of the claims, and, more specifically, does not operate to narrow the scope of any claims.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

The following paragraph has been inserted at page 4, line 3 as follows:

--FIGURE 12a is a graphical representation for a device configured according to the present invention;--

The paragraph beginning on page 4, line 3, has been amended as follows:

--FIGURE 12b is a graphical representation of transmission and reflectance characteristics for a device configured according to the present invention for operation optimized at 850nm;--

The paragraph beginning on page 4, line 13, has been amended as follows:

--FIGURES 17a-19b are graphical representations of devices according to the present invention, and of the optical transmittance, [versus] the light wavelength and reflectance for devices constructed according to the teachings of the present invention, using different materials and layer thicknesses;--

The paragraph beginning on page 6, line 23, has been amended as follows:

--Turning to FIGURE 4, illustrated is an optical transmitter system **70**, where a VCSEL **54** is integrated with substrate **72** having formed thereon semi-transparent silicon sensor **42** and micro-lens **62**. More particularly, system **70** allows for an integrated transmitter to be packaged in a TO Can. In this embodiment, semi-transparent sensor **[52]** 42 and micro-lens **62** are integrated on quartz substrate **72** as a sensor chip **74**. Thereafter, sensor chip **74** with the built-in sensor and micro lens is attached to the VCSEL **54**. Such interconnection may be accomplished by many connecting schemes including flip-chip bonding using solder bumps **76** and **78**, as well as other discussed techniques. Though not shown, electrical contacts of the amorphous silicon sensor **42** may be passed on to wire bonding pads on the top surface of the VCSEL **54**. These wire bonding pads will be isolated from the VCSEL using a dielectric layer. The entire module

is then solder bonded to a heat sink in a TO Can.--

The paragraph beginning on page 11, line 18, has been amended as follows:

--Turning attention to FIGURES 12a-b, provided is a graph of light transmittance versus light wavelength (nm) for a device, shown as a block diagram, configured using the above materials in the recited thicknesses. As may be observed in this graphical representation, the highest percentage of light passage is at approximately the 850nm wavelength, where light transmittance reaches nearly 98 percent.--

The paragraph beginning on page 13, line 3, has been amended as follows:

--FIGURES 17a-b show[s] a graph of light transmittance versus light wavelength (nm) for a specific design which may be implemented in accordance with the teachings of this application. More specifically, the operational characteristics shown in FIGURE 17b are for a device, as shown in FIGURE 17a, with a layer of silicon having a thickness of approximately 35.48nm deposited on a glass substrate. A SiO2 layer having a thickness of approximately 86.68 nm is positioned above this silicon layer. A second silicon layer having a thickness of approximately 141.84nm is then placed above the SiO2 layer. A lower ITO electrode having a thickness of approximately 10 nm is placed next, upon which is positioned an amorphous silicon (Si) sensor region approximately 663 nm thick, followed by an upper ITO electrode having a thickness of approximately 20 nm thick. Above the upper ITO electrode is placed another silicon layer having a thickness of approximately 68.10nm, and a final SiO2 top layer of approximately 274.59nm thick.--

The paragraph beginning on page 13, line 15, has been amended as follows:

--Such a design, as shown by the graph of FIGURE 17b, produces a generally high level of transmittance of approximately 95% of light at the 1500nm wavelength. Unlike more conventional anti-reflection designs, this embodiment features several dielectric layers below the first electrode. The design produces a large transmission window that allows operation at a wide range of wavelengths. This wide transmission bandwidth is especially useful in optical communication applications utilizing wavelength division multiplexing.--

The paragraph beginning on page 13, line 22, has been amended as follows:

--Turning to FIGURES 18a-b, illustrated is a graphical representation for a further device according to the present invention which is intended to have a high transmittance at 1500nm. It is noted that this device, as shown in FIGURE 18a, includes a first TiO2 layer of 158.13 nm, a first ITO layer of 10nm, upon which is placed a Si layer of 601.47nm. Thereafter, located on top of the silicon layer is a second ITO layer of 20nm, a TiO2 layer of 102.26nm, and finally a SiO2 layer of 154.79nm. For this design, the light transmission at 1500 nm wavelength is slightly below 95%.--

The paragraph beginning on page 13, line 29, has been amended as follows:

--Comparing the design of FIGURE 17a with the design of FIGURE 18a, it is noted that the design of FIGURE 18a has an advantage of fewer deposition cycles, as the TiO2 and the SiO2 may be deposited in the same batch as the ITO. However, when using this design, there is concern with the manner in which the photovolatic Si layers will grow on the TiO2.--

The paragraph beginning on page 14, line 3, has been amended as follows:

--A third representation for a sensor according to the present invention and the transmission of light through such a sensor is shown in FIGURES 19a-b. In this design, as shown in FIGURE 19a, a first layer of TiO2 is used having a thickness of approximately 158.34 nm. Deposited on top of this is a first ITO layer of 5 nm, on which is located a Si sensor region of 568.97 nm. Deposited on top of the Si layer is a second ITO layer of approximately 10 nm. Next is a layer of TiO2 of approximately 106.89 nm thick, and thereafter a layer of SiO2 181.15 nm thick is deposited.--

The paragraph beginning on page 14, line 10, has been amended as follows:

--As illustrated by the graphical representation in FIGURE 19b, it is noted the transmittance percentage of light at the 1500nm wavelength is approximately 97%.--

The paragraph beginning on page 14, line 12, has been amended as follows:

--From the forgoing designs and the graphical representations of the outputs in

FIGURES 17a through 19b of these designs, it may be seen that improvements may be achieved in the percentage of light transmitted. However, improving the output does include at times more complicated deposition processes. For example, in the last mentioned design as reflected by FIGURES 19a-b, the improvement is achieved, however it is necessary to use extremely thin layers of the ITO.--

The paragraph beginning on page 14, line 18, has been amended as follows:

--Turning to FIGURE 20, each of the sensors of the foregoing descriptions may take advantage of an additional anti-reflective coating on the device backside. More particularly, a sensor **130** formed of amorphous silicon or other appropriate material has patterned on its upper surface a distributed bragg reflector **132.** A second distributed bragg reflector **134** is configured below the sensor **130**, creating a Fabry Perot cavity. Formation of this cavity allows for the creation of an electric field standing wave profile. The standing wave profile is then designed to have a low amplitude at the electrode region which in turn minimizes absorption losses at the electrode. Careful attention needs to be placed in optimizing the tradeoff between minimizing absorption in the ITO and maximizing transmission through the layer stack. It is to be understood that this feature and concept may be applied to all embodiments previously described.--

Blank page 21 has been removed.

In the Claims:

Blank page 26 has been removed.